## REMARKS

The Applicant respectfully requests further examination and reconsideration in view of the above amendments and arguments set out fully below. Claims 1-7, 9-18, 20, 21, 40 and 41 were pending in this application. Applicant respectfully acknowledges allowance of Claims 1-7, 9-18, 20 and 21. Claims 40 and 41 have been rejected. By way of the above amendment, Claims 40 and 41 have been canceled. Accordingly, Claims 1-7, 9-18, 20 and 21 are now pending.

**Rejections Under 35 U.S.C. § 103**

Within the Office Action, Claims 40 and 41 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,914,485 to Curtis (hereinafter Curtis). Claims 40 and 41 have now been canceled. The rejection under 35 U.S.C. § 103(a) is accordingly removed.

A copy of an Office Action issued by another Examiner on May 24, 2004, for a Co-pending Patent Application Serial No. 10/280,850, filed October 25, 2002 is included with this response. The Patent Application Serial No. 10/280,850 is a Divisional Patent Application of the present patent application. Should the Examiner have any questions or comments, he is encouraged to call the undersigned at (408) 530-9700 to discuss them so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,
HAVERSTOCK & OWENS LLP

Dated: June 29, 2004

By: Jonathan O. Owens
Jonathan O. Owens
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CERTIFICATE OF MAILING (37 CFR§ 1.8(a))
I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the U.S. Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to the: Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450

HAVERSTOCK & OWENS LLP.
Date: 6-29-04 By:

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/3/2004 has been entered.

### *Response to Amendment*

2. To clarify the record at this point in the prosecution, claims 22-29, 31-36, and 38-42 are pending.

### *Response to Arguments*

3. Applicant's arguments, filed in the amendment and response of 5/3/2004, have been fully considered but they are not persuasive.

Applicant's summary of the invention is acknowledged.

With respect to applicant's arguments concerning the "complex formulation issues" described in prior communications, the examiner herein incorporates the responses set-forth in the Office action mailed 2/2/2004 and the advisory Office action mailed 4/20/2004, where these issues are addressed in great detail. This argument is not persuasive.

With respect to the additional features of the invention argued at 5:19-24 of applicant's response, these features are not recited in any of the pending claims. Consequently, this argument is not commensurate in scope with the claimed invention and is not persuasive. Although the claims are interpreted in light of the specification, limitations from the specification

are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

With respect to the claimed features argued at 5:25-30 of applicant's response, as cited in rejection of original claim 30, Mani teaches expansion of thermoplastic microspheres encapsulating a blowing agent dispersed in n acrylic resin binder utilizing a microwave. Further, Wolinski teaches that the expandable polymer and blowing agent constitutes 1-45% by weight of the heat expandable medium by weight (abstract). Consequently, this argument is not persuasive.

***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. **Claims 22 – 29, 36, 38, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolinski et al. (US 4,006,273 A) in view of Payne (US 5,558,816 A) OR, IN THE ALTERNATIVE, Wolinski et al. (US 4,06,273 A) in view of Morrison (US 4,401,712 A).**

With respect to claims 22 and 36, Wolinski teaches a method of forming raised prints and graphic designs (i.e., "relief art" as described at pp. 1 – 2 of the spec.) on substrates [abstract and c. 6, ll. 49 – 60]. The method comprises the steps of:

a. providing a substrate [abstract; c. 5, ll. 35 – 38; c. 6, ll. 49 – 60; and Examples];

b. applying a heat expandable medium in a desired pattern on the substrate, wherein the expandable medium comprises an acrylic emulsion body and expandable polymer

with a blowing agent encapsulated therein [abstract; c. 1, l. 64 – c. 2, l. 3; c. 2, l. 35 – c. 3, l. 31; c. 4, ll. 34 – 36; and Examples]; and

c. expanding the medium by applying heat to the medium whereby the raised print or graphic design (i.e., "relief art" as described at pp. 1 – 2 of the spec.) is created [c. 5, l. 53 – c. 6, l. 26 and Examples].

This reference does not teach that the medium comprises a preservative selected from among those listed in claim 22, or that the medium comprises the preservative in the range of 0.005 – 0.50 % of the total weight of the medium.

Payne teaches incorporating 1,2-benzisothiazolin-3-one (BIT) into acrylic and/or acrylate emulsions to prevent microbiological spoilage [c. 1, ll. 9 – 15].

As noted above, Wolinski is concerned with the shelf-life and storage stability of the medium. Wolinski is silent with respect to the addition of a preservative, although many other conventional additives may be included in the medium. Based on the teaching of Payne, it would have been obvious to one of ordinary skill in the art to modify the method of Wolinski so as to incorporate a preservative, specifically BIT, into the medium. One of ordinary skill in the art would have been motivated to do so by the desire and expectation successfully preventing microbiological spoilage of the medium and thereby increasing the storage life of the medium.

IN THE ALTERNATIVE, Morrison teaches incorporating tetrachloroisophthalonitrile into acrylic latexes to prevent spoilage and increase shelf life [c. 2, ll. 20 – 68].

As noted above, Wolinski is concerned with the shelf-life and storage stability of the medium. Wolinski is silent with respect to the addition of a preservative, although many other conventional additives may be included in the medium. Based on the teaching of Morrison, it

would have been obvious to one of ordinary skill in the art to modify the method of Wolinski so as to incorporate a preservative, specifically tetrachloroisophthalonitrile, into the medium. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully preventing microbiological spoilage of the medium and thereby increasing the storage life of the medium.

With specific respect to claim 36, it is the examiner's position that the amount of preservative added is a result-effective variable effecting the degree of microbiological protection afforded the medium and the storage life thereof. Absent a clear and convincing showing of unexpected results demonstrating the criticality of the claimed amount of preservative added, it would have been obvious to one of ordinary skill in the art to optimize such a result-effective variable by routine experimentation [MPEP § 2144.05(II)(B)].

With respect to claim 23, Wolinski further teaches that the substrate is fabric [c. 6, ll. 49 – 60].

With respect the claim 24, Wolinski further teaches that the expandable medium may be applied by common techniques including brushing, toweling, and spraying [c. 5, ll. 38 – 42]. With respect to claim 40, utilizing a nozzle is a common and well-known expedient for the spray-application of a coating material to a substrate.

With respect to claim 25, Wolinski teaches that the expandable medium may be applied to the substrate through a stencil [c. 5, l. 41].

With respect to claim 26, Wolinski teaches that the relief art may be further overcoated with the same medium without the microsphere loading to increase the intensity and tint of

colors [c. 7, ll. 7 – 13]. It is the examiner's position that this teaching reads on applicant's claim to "decorating the relief art," particularly in light of p. 3, ll. 7 – 8 of the spec.

With respect to claims 27 and 28, Wolinski teaches that the expandable medium, before heating, may contain pigments, dyes, or lakes [c. 2, ll. 11 – 34]. While Wolinski does not explicitly state that the pigments are "water compatible," the pigments become part of the aqueous emulsion and are, in the examiner's opinion, inherently "water compatible."

With respect to claim 29, Wolinski teaches that the expandable medium is expanded by heating to about 90 – 150 °C [c. 5, ll. 55 – 57]. This range encompasses that of from 125 – 140 °C claimed. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists [MPEP § 2144.05(I)]. Further, Wolinski teaches a variety of heating times from 15 seconds to 3 minutes, including a value of 2 minutes [see Examples].

With respect to claim 38, Wolinski provides, as a specific example of the blowing agent, neopentane [c. 8, ll. 24 – 25]. It is the examiner's position that neopentane is an alkane.

With respect to claim 40, Wolinksi teaches that the expandable polymer with a blowing agent comprises 1-45 % by weight of the heat expandable medium (abstract).

6. **Claims 31-33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolinski et al. (US 4,006,273 A) in view of Payne (US 5,558,816 A) OR, IN THE ALTERNATIVE, Wolinski et al. (US 4,06,273 A) in view of Morrison (US 4,401,712 A), as applied to claim 22 above, in further view of Goodale et al. (US 4,194,026; hereinafter "Goodale").**

The teachings of Wolinski, Payne, and Morrison are detailed above. Further, Wolinski teaches, in Example I, that the acrylic emulsion forms 63.95 % of the total weight of the medium and that the viscosity of the medium may be adjusted by adding a thickener from anywhere between 300 and 60,000 cps [c. 7, l. 55 and c. 8, ll. 31-57].

None of these references teach: with respect to claim 31, that the thickener is either an acrylic thickener or a cellulosic thickener and, with respect to claim 32, that the acrylic binder is selected from those claimed.

Goodale teaches a method that comprises coating a substrate with an expandable medium comprising an aqueous acrylic emulsion and expandable polymer microparticles [abstract; c. 2, ll. 44-51; c. 3, ll. 15-20; and c. 6, ll. 59-68]. The viscosity of the medium is adjusted by the addition of an acrylic thickener [c. 6, ll. 49-51 and c. 8, ll. 5-7, for example].

Wolinski and Goodale teach similar expandable media. Wolinski teaches adjusting the viscosity by adding a thickener, specifically fumed silica. Goodale teaches adjusting the viscosity by adding an acrylic thickener. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Wolinski in view of Payne or, in the alternative, Wolinski in view of Morrison so as to substitute, as the thickener, the acrylic thickener of Goodale. One of ordinary skill in the art would have been motivated by the desire and expectation of a similar result: thickening the medium.

7. **Claims 34 and 35 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolinski et al. (US 4,006,273 A) in view of Payne (US 5,558,816 A) OR, IN THE ALTERNATIVE, Wolinski et al. (US 4,06,273 A) in view of Morrison (US 4,401,712 A), in**

**further view of Goodale et al. (US 4,194,026; hereinafter "Goodale"), as applied to claim 33 above, in further view of Yun et al. (US 4,226,754; hereinafter "Yun").**

The teachings of Wolinski, Payne, Morrison, and Goodale are detailed above. Further, Wolinski teaches adding fumed silica thickener in an amount of 1.39 % of the total weight of the medium. Neither of these references teach that the thickener is pH sensitive giving the medium a viscosity of 3,000-25,000 cps in a pH range of 7.0-9.0.

Yun teaches an acrylic thickener for an aqueous dispersion of a polymer (including acrylic) in water [abstract; 3, ll. 1-50; and c. 10, l. 55-c. 11, l. 2]. Yun teaches that "[t]he viscosity of the aqueous compositions obtainable with the polymer thickener will depend on the amount of polymer dissolved in the aqueous composition which in turn depends on the final pH of the aqueous composition" [c. 10, ll. 26-30]. Consequently, it is the examiner's position that the teaching of Yun establishes both the viscosity and pH of an aqueous polymer dispersion as result-effective variables influencing each other and the resulting coating properties of the composition. A composition must be viscous enough to remain on the substrate without running off, while not being so viscous to prevent flowing and/or spreading. Consequently, absent a clear and convincing showing of unexpected results demonstrating the criticality of the claimed viscosity and pH ranges, it would have been obvious to one of ordinary skill in the art to optimize such result-effective variables as pH and viscosity by routine experimentation [see *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and MPEP § 2144.05(II)].

With respect to claim 35, it is also the examiner's position that the amount of thickener added to the medium is a result-effective variable, effecting the viscosity as discussed above. Consequently, absent a clear and convincing showing of unexpected results demonstrating the

criticality of the claimed thickener amount range, it would have been obvious to one of ordinary skill in the art to optimize such result-effective variables thickener amount by routine experimentation [see *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and MPEP § 2144.05(II)].

8. **Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolinski et al. (US 4,006,273 A) in view of Payne (US 5,558,816 A) OR, IN THE ALTERNATIVE, Wolinski et al. (US 4,06,273 A) in view of Morrison (US 4,401,712 A), as applied to claim 38 above, in further view of Petersen et al. (US 5,484,815 A).**

The teachings of Wolinski, Payne, and Morrison are detailed above. Further Wolinski teaches polyvinylidene chloride (PVDC) expandable microspheres, encapsulating neopentane blowing agent [c. 4, ll. 14-15 and c. 8, ll. 24-25]. Petersen teaches PVDC expandable microspheres encapsulating alkane blowing agents, of which neopentane and isobutene are given as explicit examples [c. 1, ll. 19-45]. It is the examiner's position that the fair teaching of this reference is that neopentane and isobutene may equivalently be used as blowing agents in PVDC microspheres. Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Wolinski in view of Payne or Wolinski in view of Morrison so as to substitute isobutene for neopentane as the blowing agent in the PVDC microspheres. One of ordinary skill in the art would have been motivated by the expectation of a similar result: that neopentane and isobutene are both suitable and equivalent blowing agents for PVDC microspheres.

9. **Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolinski et al. (US 4,006,273 A) in view of Payne (US 5,558,816 A) OR, IN THE ALTERNATIVE,**

**Wolinski et al. (US 4,006,273 A) in view of Morrison (US 4,401,712 A), as applied to claim 40 above, in further view of Mani et al. (US 3,778,364 A).**

The teachings of Wolinski, Payne, and Morrison are detailed above. While Wolinski does not specifically teach that the step of expanding the medium is accomplished by heating the medium with a microwave source, the reference places no limitation on the method of heating.

Mani teaches a method of expanding thermoplastic microspheres encapsulating a blowing agent dispersed in an acrylic resin binder (columns 1-6). Specific microspheres envisioned by Mani expand at temperatures of about 130°C, like those of Wolinski and applicant (3:4-6). Expansion of the microspheres is accomplished by the application of microwave heat (3:11-13).

Since both Wolinski and Mani teach similar expandable media and expanding said media at similar temperatures, and Wolinski is silent with respect to how heat is applied to expand the medium, it would have been obvious to one of ordinary skill in the art, based on the teaching of Mani, to modify the method of Wolinski so as to heat the medium utilizing a microwave source. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully expanding the medium. Although not explicitly stated by Mani, it is the examiner's position that applicant's claimed "placing the substrate...in a microwave system" to expose the substrate to microwaves is a common and well-known expedient for exposing a coated substrate to microwaves.

10. **Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolinski et al. (US 4,006,273 A) in view of Payne (US 5,558,816 A) OR, IN THE ALTERNATIVE, Wolinski et al. (US 4,06,273 A) in view of Morrison (US 4,401,712 A), each in further view of Mani et al. (US 3,778,364 A).**

With respect to claims 22 and 36, Wolinski teaches a method of forming raised prints and graphic designs (i.e., "relief art" as described at pp. 1 – 2 of the spec.) on substrates [abstract and c. 6, ll. 49 – 60]. The method comprises the steps of:

d. providing a substrate [abstract; c. 5, ll. 35 – 38; c. 6, ll. 49 – 60; and Examples];

e. applying a heat expandable medium in a desired pattern on the substrate, wherein the expandable medium comprises an acrylic emulsion body and expandable polymer with a blowing agent encapsulated therein [abstract; c. 1, l. 64 – c. 2, l. 3; c. 2, l. 35 – c. 3, l. 31; c. 4, ll. 34 – 36; and Examples]; and

f. expanding the medium by applying heat to the medium whereby the raised print or graphic design (i.e., "relief art" as described at pp. 1 – 2 of the spec.) is created [c. 5, l. 53 – c. 6, l. 26 and Examples].

This reference does not teach that the medium comprises a preservative selected from among those listed in claim 22, or that the medium comprises the preservative in the range of 0.005 – 0.50 % of the total weight of the medium.

Payne teaches incorporating 1,2-benzisothiazolin-3-one (BIT) into acrylic and/or acrylate emulsions to prevent microbiological spoilage [c. 1, ll. 9 – 15].

As noted above, Wolinski is concerned with the shelf-life and storage stability of the medium. Wolinski is silent with respect to the addition of a preservative, although many other conventional additives may be included in the medium. Based on the teaching of Payne, it would have been obvious to one of ordinary skill in the art to modify the method of Wolinski so as to incorporate a preservative, specifically BIT, into the medium. One of ordinary skill in the

art would have been motivated to do so by the desire and expectation successfully preventing microbiological spoilage of the medium and thereby increasing the storage life of the medium.

IN THE ALTERNATIVE, Morrison teaches incorporating tetrachloroisophthalonitrile into acrylic latexes to prevent spoilage and increase shelf life [c. 2, ll. 20 – 68].

As noted above, Wolinski is concerned with the shelf-life and storage stability of the medium. Wolinski is silent with respect to the addition of a preservative, although many other conventional additives may be included in the medium. Based on the teaching of Morrison, it would have been obvious to one of ordinary skill in the art to modify the method of Wolinski so as to incorporate a preservative, specifically tetrachloroisophthalonitrile, into the medium. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully preventing microbiological spoilage of the medium and thereby increasing the storage life of the medium.

While Wolinski does not specifically teach that the step of expanding the medium is accomplished by heating the medium with a microwave source, the reference places no limitation on the method of heating.

Mani teaches a method of expanding thermoplastic microspheres encapsulating a blowing agent dispersed in an acrylic resin binder (columns 1-6). Specific microspheres envisioned by Mani expand at temperatures of about 130°C, like those of Wolinski and applicant (3:4-6). Expansion of the microspheres is accomplished by the application of microwave heat (3:11-13).

Since both Wolinski and Mani teach similar expandable media and expanding said media at similar temperatures, and Wolinski is silent with respect to how heat is applied to expand the medium, it would have been obvious to one of ordinary skill in the art, based on the teaching of

Mani, to modify the method of Wolinski in view of Payne or Wolinski in view of Morrison so as to heat the medium utilizing a microwave source. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully expanding the medium.

***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P. Fletcher III whose telephone number is (571) 272-1419. The examiner can normally be reached on Monday through Friday, 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WPF 5/12/2004
William P. Fletcher III
Examiner
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